



Eye Colour

Task One: Is your class the same as Michael's class?

- 1.** Survey the students in your class to find the most common eye colour. Use the table of eye colour (below) for your class and compare it to the table for Michael's class.

EYE COLOUR OF STUDENTS - COMPARING CLASSES

Eye Colour	Michael's class	My Class
Blue	12	8
Brown	4	18
Green	3	0
Grey	0	0
Hazel	7	5
Other	0	0
Total	26	31

Teacher Note:

'My class data' has been taken from a random sample for these answers

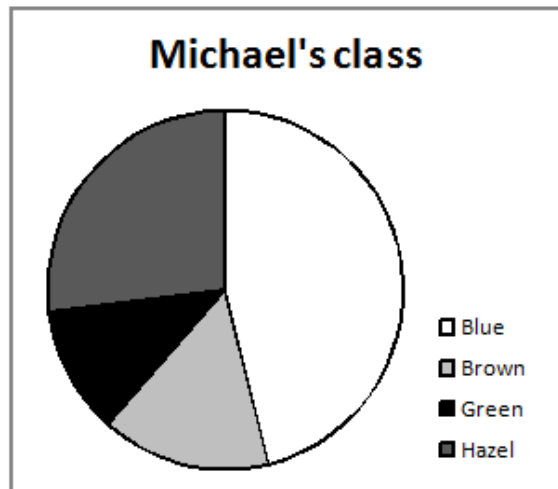
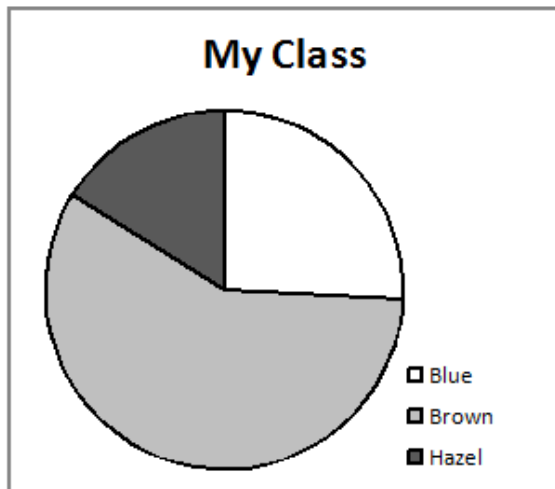
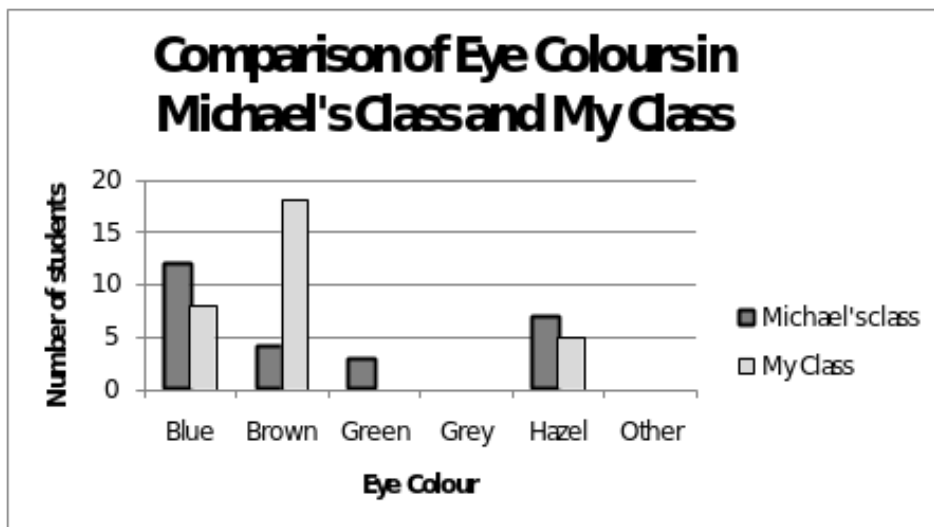
- 2.** How do the classes differ?

Results will differ. Comment could be made about the different total number of students. Focus on important differences and similarities, such as both classes have no students with 'grey' or 'other' eye colours. Or Michael's class has an unusually high number of blue eyed students and a low number of brown eyed students. This is genetically uncommon for Australia, and could be followed up in a Science lesson.

- 3.** Draw two different graphs to compare Michael's class to your class. Column graphs, dot plots and pie charts are often used to represent categorical data like eye colour.

Comparisons can be made more easily by having both classes on the same column graph, using a different colour for each class.

Teacher Note: Students with less advanced graphing skills can draw one graph for 'Michael's Class' and the second graph for 'My Class'. Bar graphs highlight numerical differences, while pie graphs highlight proportional differences. It is a useful tool to show the same data in different graphs to make different types of comparisons.



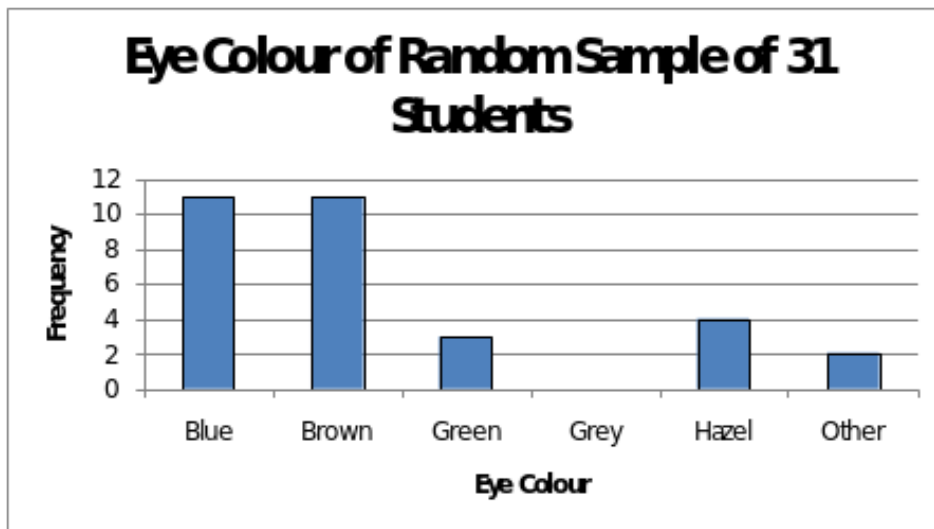
- 4.** Is it fair to make comparisons between two classes that have different numbers of students? Give reasons for your answers.
It can be misleading to use a column graph to make comparisons between classes of different sizes, as the graph measures 'number of students' which would add up to different totals. A comparison using pie-graphs is appropriate, as the sections being compared are fractions of a whole, and therefore representing each eye colour as a fraction of one whole.

Task Two: Is your class a typical Australian class?

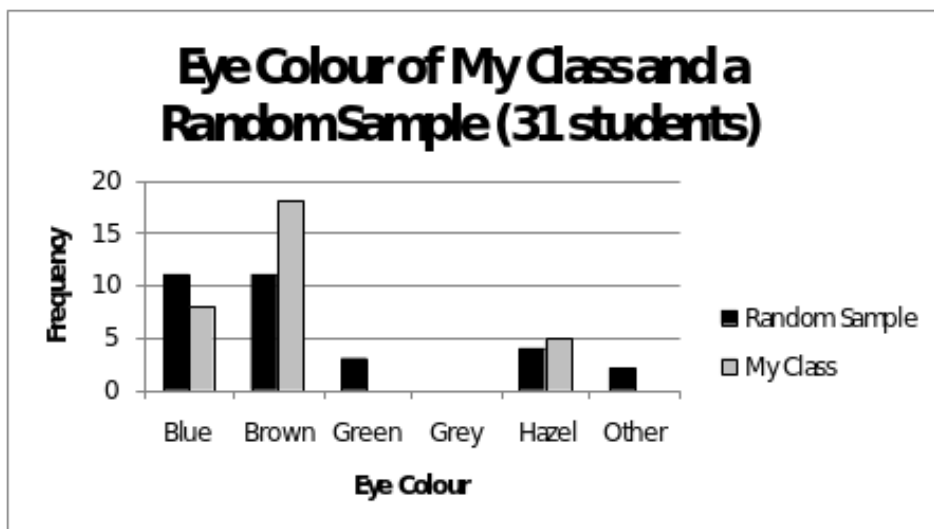
- 5.** Go to the CensusAtSchool web site (www.abs.gov.au/censusatschool) and obtain a sample from the [random sampler](#) to carry out your investigation. Make sure the sample size is the same size as your class.
- 6.** Prepare a frequency table to record the eye colour of students in your sample.
(Hint: It will be easier to count the number of students in each category if you sort the data first. If you are good at Excel it will be even easier if you use the [COUNTIF](#) function to do the counting for you)

<i>Eye Colour</i>	<i>Tally</i>	<i>Frequency</i>
<i>Blue</i>	<i>### ## I</i>	<i>11</i>
<i>Brown</i>	<i>## ## I</i>	<i>11</i>
<i>Green</i>	<i>III</i>	<i>3</i>
<i>Grey</i>		<i>0</i>
<i>Hazel</i>	<i>IIII</i>	<i>4</i>
<i>Other</i>	<i>II</i>	<i>2</i>
<i>Total</i>		<i>31</i>

- 7.** Draw a graph to represent your random sample.



- 8.** Compare the results for your class with the data sample obtained from the Random Sampler.



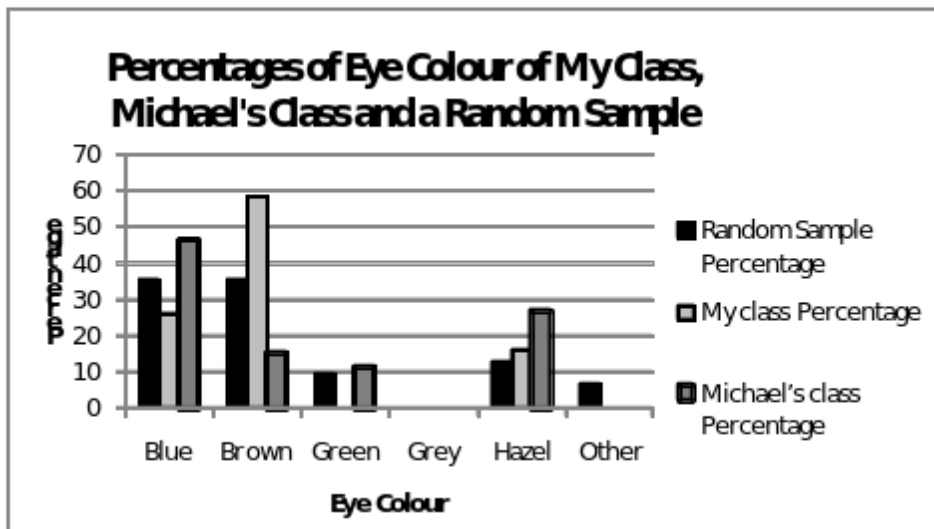
- 9.** Explain how your random sample differs from your class survey.
Results will differ. Focus on similarities and differences.

- 10.** Comparing the percentage of student eye colour makes more sense when the group sizes are not the same. Fill in the table below with the data from your class, Michael's class and the random sampler. Calculate the fraction and then the percentage.
 (Hint: to calculate percentage = eye colour ÷ total x 10)

EYE COLOUR OF STUDENTS - PERCENTAGE									
Eye	My	My	My	Micha	Micha	Micha	Rand	Rand	Rand

Colour	Class	Class Fraction	class %	el's Class	el's Class Fraction	el's class %	om Sample	om Sample Fraction	om Sample %
Blue	8	8/31	26	12	12/26	46	11	11/31	35
Brown	18	18/31	58	4	4/23	15	11	11/31	35
Green	0	0/31	0	3	3/26	12	3	3/31	10
Grey	0	0/31	0	0	0/26	0	0	0/31	0
Hazel	5	5/31	16	7	7/26	27	4	4/31	13
Other	0	0/31	0	0	0/26	0	2	2/31	6
Total	31	31/31	100	26	26/26	100%	31	31/31	100%
		1	%						

11. Draw a new graph, this time using the percentage of students instead of the number of students.



12. How does the graph using percentage differ from the earlier graph?

The comparison between the percentage graph and the numerical graph both show the same relationship between 'My Class' and the

random sample. Both classes have the same total number of students, so the numerical graph is proportionately identical to the percentage graph. The two graphs have the same shape. However, fair comparison can now be made with 'Michael's Class'. In this example, we can see that in the random sample of a typical Australian class, equal numbers of blue and brown as the most popular eye colour. In 'My class' the most common eye colour is brown, and in 'Michael's Class', the most common eye colour is blue.

13. What is the advantage of using percentage instead of the number of students?

Percentage allows comparison between data sets, as both sets of data are now the same size of one hundred. (A percentage being a number out of one hundred)

14. Which set of graphs gives the best comparison between the data for the different classes?

The graph showing percentages gives the best picture of the data, as it allows comparison of classes and comparison to a typical Australian class.